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## **NOTIONAL DEFINED CONTRIBUTION PLANS**

**Prepared by PADCO Social Sector Reform Project**

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# **1. INTRODUCTION**

Notional defined contribution (NDC) plans are one of the most controversial topics in pension reform today. Several countries have adopted systems that use notional accounts, including Sweden, Latvia, Poland, Italy and Mongolia. Many others are considering them. NDCs have strong supporters and equally strong detractors.

Notional defined contribution plans are a different way of expressing the formula for calculating plan benefits in a solidarity system. Instead of calculating benefits based on average pay and years of service, notional plans calculate benefits by accumulating, on paper, the mandatory contributions made by (or on behalf of) participants in the solidarity system. The account balance is credited with “interest earnings” based on some type of external index. At retirement, the total accumulation – payments plus “interest” – in the hypothetical account is converted to an annuity based on a life expectancy factor.

NDCs – or notional accounts – are a radical departure from traditional ways of computing benefits. In fact, both supporters and opponents make valid arguments. In some instances, a particular feature is perceived as an advantage by proponents and a weakness by opponents. In other instances, reasons for supporting or opposing notional defined contributions plans have nothing to do with the technicalities of notional accounts, but with the philosophical approach to pension reform. For example, most people who support the concept of mandatory accumulation systems oppose notional account plans because they perceive them as a substitute for true funding. Yet many of these same people advocate designs for a funded system that are functionally equivalent to notional account plans.

Despite their unique characteristics, notional account plans raise the same basic questions as all pension reforms. Any pension reform plan will be successful only if it meets certain basic conditions. These are::

- Benefits must be adequate for everyone including the high paid, underemployed, disabled, etc.
- The pension system must be fiscally sustainable in the long and short term
- Benefits must be equitable in relation to contributions
- The plan must be communicated and understood by the government, Parliament, employers, and citizens
- It must be possible to implement the plan effectively, and the plan must be properly administered
- Laws must be well written and properly enforced.

This report will first discuss the features of notional account plans, and then the advantages and disadvantages of this approach. The final section reviews whether such a system would be appropriate for Ukraine.

## **2. WHAT IS A NOTIONAL DEFINED CONTRIBUTION PLAN?**

### **2.1 ANOTHER OPTION FOR AMENDING THE SOLIDARITY SYSTEM BENEFIT FORMULA**

A notional defined contribution plan is an alternative way for a state solidarity system to calculate the level of pension benefits for which individuals are eligible when they retire. The term notional account refers to the individual account balance maintained for each participant. It is called “notional” because the account exists only on paper. The money does not exist in any real account in a bank or government agency. However, the benefit payable from the plan is based on this notional account balance, and the notional account balance is based on actual contributions made to the solidarity system by the participant, or on the participant’s behalf. However, there are NO accumulated contributions to pay benefits to the participant when he or she retires. Participant contributions are immediately used to pay pension benefits to current retirees just like in any other “pay-as-you-go” solidarity system.

### **2.2 NOTIONAL “RATE OF RETURN”**

The notional contributions made to the notional accounts earn a notional “rate of return”. This hypothetical return is usually tied to some external index. Some of the most common indexes include the percentage increase in average wages, the percentage increase in total national wages, the rate of return on short term state securities, or the rate of inflation. Whatever index is used, the hypothetical contributions are credited with a hypothetical rate of return. Again, this is just a bookkeeping entry. There is never any actual money backing the account, nor are there any actual assets purchased, and, therefore, there are no actual rates of return.

### **2.3 CONVERSION TO ANNUITY AT RETIREMENT**

At retirement, the hypothetical account balance is converted into an annuity. Typically this is done by dividing the account balance by the person’s life expectancy at their retirement age. The law must state the basis for calculating the life expectancy and a decision must be made what mortality table and interest rate should be used for the calculation. Also, a decision must be made about whether to use separate factors for males and females, or to use some factor that averages life expectancy for men and women and apply this factor to both. Since females generally live longer than males, using an average life expectancy increases the value of the annuity for women and reduces it for men when compared with the annuity values if separate life expectancies were used. . However, since everything is hypothetical, the decision is merely another element of the benefit formula. The factors used to convert the hypothetical account balance into an annuity are NOT based on actual annuity purchase rates available from insurance companies, and no annuity is actually purchased from an insurer. The annuity

purchase rate is merely a mechanism for converting the hypothetical account balance into an equivalent annuity. However, this annuity calculation is very real. It determines the actual benefit paid to the participant at retirement.

## **2.5 PAY-AS-YOU GO PLAN, NOT A FUNDED PLAN**

Notional account plans are pay-as-you-go plans just like traditional solidarity systems. There are no assets backing the notional accounts. The accounts are merely maintained within the Pension Fund's record system on a piece of paper, and are nothing more than an accounting tool for computing plan benefits. The pension system remains unfunded. Contributions from workers are used to pay benefits to those who are already retired. However, the language of funded plans is used to express the benefit under the non-funded plan.

Why are notional plans so controversial? Do they represent a radical new way to calculate benefits? After all, the solidarity system remains an unfunded solidarity system. All that has changed is the way the benefit is calculated. The following sections of this report explore the reasons why the notional account concept is so controversial, and the advantages and disadvantages of these plans from different perspectives. As will be seen, the arguments are often confusing because sometimes notional account plans are compared to a traditional solidarity system, and at other times, to a funded accumulation system.

# **3. WHAT ARE THE ADVANTAGES OF NOTIONAL ACCOUNTS?**

## **3.1 DIRECTLY TIES BENEFITS TO CONTRIBUTIONS MADE**

Maintaining notional accounts relates pension benefits clearly and directly to contributions made. Since the ultimate benefit is equal to the actual contributions made to the solidarity system, augmented by some kind of "interest earnings", it is clear to participants that their pension benefits are proportional to the amount they have contributed to the plan. Under traditional benefit formulas, the relationship between contributions and benefits is not as clear. To participants, notional accounts make the solidarity system seem just like an accumulation system in which real contributions are used to purchase real assets, and the account balance is converted into a real annuity at retirement. But the accounts do not exist, and the ability of the pension system to pay benefits will depend on contributions from future workers.

## **3.2 MAKES INTERNAL RATE OF RETURN CLEAR**

In a typical plan, employees contribute during their working careers and receive benefits after retirement. However, it is difficult for employees to determine whether they are getting a good rate of return on their contributions. While this calculation is logically possible, it involves sophisticated actuarial mathematics and very careful record keeping. The notional account plan makes it clearer that benefits are related to contributions and what rate of return is being earned

on those contributions. This makes the payroll contribution seem more like an investment and less like a tax.

### **3.3 CHANGES THE “PARADIGM”**

Moving from a traditional plan to a notional account plan changes the language of the solidarity system from traditional defined benefit formulas based on final average pay and years of service, to a defined contribution formula based on contributions and investment earnings. Changing the benefit formula in such a radical way makes it difficult for participants to compare the benefits under the new system to the benefits they would have received under the old system. In a traditional solidarity system, it is easy to calculate the benefit at retirement as a percent of income long before reaching pension age. Under a notional account plan, the difficulty of predicting future “interest” earnings and annuity factors makes it difficult to estimate the ultimate benefit at retirement. This change in paradigm allows the government to make changes to the system that are difficult to detect – changes that would be glaringly obvious under a traditional formula. Therefore, introducing notional accounts may make it easier politically to pass pension reform legislation.

### **3.4 ALLOWS SHIFT TO CAREER AVERAGE PAY FORMULA**

Notional defined contribution plans base pension benefits on participants’ wages in each year over their entire careers. In many traditional solidarity systems, benefits are based on average pay only during the last few years of working life. In countries experiencing inflation or rapid real wage growth, therefore, moving to a notional account formula reduces the incentives for “pre-pension” promotions and other measures that artificially inflate benefits. Again, what would be an obvious reduction in the benefit calculation formula can be accomplished with less scrutiny by introducing a notional account plan.

### **3.5 AUTOMATICALLY ADJUSTS BENEFIT FOR EARLY AND LATE RETIREMENT**

Benefits under a notional account plan are “automatically” adjusted for early or late retirement. If participants retire early, then their hypothetical account balance is reduced because they will have contributed for less time. In addition, the participant’s life expectancy will be greater at a younger age, so the account balance will be converted into a smaller annuity than would have been paid if the participant had delayed receipt of the pension for several years.

If participants delay retirement, the opposite happens. The account balance is larger because the participant has contributed for more years and life expectancy is lower, so the account balance “purchases” a larger annuity.

Once again, the benefit reduction for early retirement and the benefit increase for late retirement are not so obvious because the exact reduction is not stated in the definition of benefits. In a traditional plan, there are explicit early and late retirement factors in the plan, and participants easily see the consequences of early or late retirement. These adjustments are less visible in the notional account plan.

### **3.6 EASIER TRANSITION TO A FUNDED SYSTEM**

Supporters of notional accounts argue that they provide an easy transition vehicle to a funded system -- participants learn the jargon and operations of defined contribution plans. However, accounts are just paper accounts allowing participants to learn without risking real money and jeopardizing their old age security. It's like learning to play the stock market through "paper trading". Later, proponents argue, when a funded system is introduced, the public will be used to the concept. A portion of the contributions that were previously made to notional accounts can then be diverted to real accounts. This transition process is especially easy if, when the pension system benefit formula is amended, it is composed of two pieces – a traditional formula with a lower wage replacement ratio and a notional account component equal to the ultimate desired size of the funded accumulation system. Over time, notional accounts are faded out leaving a smaller solidarity system and a true funded system.

### **3.7 RECORD KEEPING IS FAR SIMPLER THAN UNDER A TRUE ACCUMULATION SYSTEM**

Since contributions are not actually invested, it is much easier to keep track of account balances in a notional plan. There is no need to measure actual investment income, to adjust for interest or dividends earned but not yet paid, to worry about contributions which arrive late or not at all, or about mistakes in reporting contributions by individual participants. There is also no need to worry about how to value assets that are not publicly traded with sufficient frequency to establish a market price, or about how to adjust account balances when benefits are erroneously paid to the wrong person. Consequently, administrative expenses are much smaller for notional account record keeping than for a true funded accumulation system.

### **3.8 EASIER TO GIVE NOTIONAL RATHER THAN REAL CONTRIBUTIONS FOR PERIODS WHEN SOMEONE IS NOT EMPLOYED**

It's much easier to credit contributions on behalf of people who are unemployed, on maternity leave, or enrolled in education programs in notional account plans than in funded systems because this doesn't require real money. The problem of paying for the higher benefits in the future resulting from these additional contributions is deferred to the future. In a funded system, the government, enterprise or other organization, or the individual must actually pay cash into the accounts for these non-earning citizens.

### **3.9 NOTIONAL ACCOUNT PLANS ARE ATTRACTIVE FOR COUNTRIES WITHOUT DEVELOPED CAPITAL MARKETS**

Some developing countries have no real capital markets and therefore cannot have a true accumulation system because there are no assets in which funds can invest. For these countries, a notional account formula offers the "look and feel" of an accumulation system without having to make real investments at home or abroad. They may hope to convert a portion of the contributions from the notional system to a true funded system in the future as investment opportunities become available.



### **3.10 AUTOMATICALLY ADJUSTS BENEFITS FOR MACROECONOMIC CHANGES**

Contributions to the solidarity system depend on average wages and the level of employment in industries whose employees are covered by the system. If average wages do not grow as much as anticipated or the size of the labor force decreases, policy makers are faced with a choice between decreasing benefits or increasing the contribution rate to restore the system to actuarial balance. The notional account plan can automatically reduce the problem of unanticipated shortfalls if the rate at which interest earnings are credited is based on the actual rate of increase in total national wages. In theory, this keeps the ultimate benefit in line with the productivity of current workers and the size of the labor force. Politicians, therefore, don't have to vote for a reduction in pension benefits. The benefit formula does it for them automatically. The same is true with increased life expectancy. As people live longer, the same account balance is converted into a smaller annuity than it would have provided in the past -- automatically. Supporters of notional accounts argue that these automatic adjustments in benefits are good because they are made incrementally -- each year. When changes in benefits must be voted for by politicians, they tend to wait until the system has plunged deeply into a financial crisis.

## **4. WHAT ARE THE DISADVANTAGES OF NOTIONAL ACCOUNTS?**

### **4.1 PEOPLE MAY FIND THE CONCEPT DIFFICULT TO UNDERSTAND**

It is difficult to explain to citizen how notional accounts work. They often fail to understand that the accounts are only hypothetical. They often think there is a real account in their name somewhere. Employees also find it difficult to understand how interest credits are calculated and how account balances are converted into annuities. When employees don't understand a plan, research has shown that they don't value and appreciate the plan or the benefits it provides. This can have an impact on compliance. In the former Soviet Union, people are familiar with and understand how the traditional solidarity system works. Changing the benefit calculation formula only confuses them.

### **4.2 GOVERNMENTS CAN BE MISLED**

Because the benefit formula appears to create individual accounts, the government may be misled into believing its only obligation is to manage the process of recording the notional contributions. This is not the case with notional accounts, although it is the case with a true accumulation system, where the government's only obligation is to regulate the system. In a funded system, the government has no future liabilities, because future benefit payments are, by definition, exactly equal to each individual's account balance. In the notional account plan, however, the government's obligation is to pay the benefits calculated according to the notional account formula. If, in the future, contributions by working people are insufficient to meet benefit payments owed to pensioners, the government is -- morally, politically, and, perhaps, legally -- obligated to make up the shortfall from its own general revenues.

### **4.3 LACK OF TRANSPARENCY OF THE BENEFIT FORMULA**

As we have seen, notional accounts may be used to make radical changes in the way benefits are calculated that is neither obvious nor easy to understand. These changes will probably reduce benefits to many pensioners. If these changes are not explained clearly to beneficiaries, at some time beneficiaries will begin to question what is happening to their benefits. Administrators must be able to explain these hidden changes. It is important to support reforms that are transparent, changes that are fully disclosed to those who are affected, and to have open debate. If the Parliament and workers will not accept and approve transparent reform, perhaps the reform is not appropriate.

### **4.4 ALL RISKS ARE PASSED TO THE WORKER**

Under a notional account system, the benefit formula automatically adjusts benefits downward to reflect adverse economic and social circumstances, or overall improvements in health and life expectancy, and vice versa. In general, the downward adjustments are more likely than upward adjustments as a result of lower fertility and longer life expectancy. Many countries, including Ukraine, will probably experience a declining population and workforce and, eventually, lower mortality rates and longer life expectancy. Therefore, the notional account formula is very likely to reduce benefits as a percent of pay over time. Once again, any decisions about reductions in benefits, increases in retirement age, increases in payroll taxes and other changes to the system should be made through transparent processes, clearly communicated to the government, Parliament and citizens.

### **4.5 BENEFIT INADEQUACY**

Defined contribution plans of any type are generally unfavorable for vulnerable members of society and women, and are best for high paid, professional males. Contributions are only made to the hypothetical accounts when someone is working and making payroll contributions. When someone is out of the workforce for any reason, “contributions” may not be made. Consequently, those workers with periods of disability, who take time off to raise children, who have significant periods of unemployment, who work in low paid jobs, or who are students will experience periods of no or very low contributions.

Women also have problems under defined contribution plans, especially if they are permitted to retire earlier than men. They will have smaller account balances because they contributed for less years and those account balances will be converted into smaller annuities because of both earlier retirement, and the longer life expectancy of women. Consequently, women could easily receive benefits half the size of a man’s from a funded accumulation system or from a notional account plan. This problem can be alleviated by equalizing male and female retirement ages, and using annuity conversion factors averaged for men and women together. This gives women higher benefits than they are theoretically entitled to at the expense of men. However, this will not make up for the greater amount of time women spend not working, or working in low paid jobs.

Another problem is that benefit replacement ratios at retirement are directly related to the amount by which the interest earning credits exceed wage growth for each individual. The greater the difference, the higher the replacement ratio. This is true for both notional and funded accumulation systems. If the rate of return on notional accounts is equal to the increase in average wages, by definition, the spread will be zero, and replacement rates will be adversely affected.

#### **4.6 NOT A FUNDED PLAN**

Notional account plans do nothing to preserve the State's ability to sustain equitable pension benefits in the face of adverse demographic trends. They do not create a partially or fully-funded pension system. They do not provide a pool of capital to allow for long-term investments that support economic growth. Notional accounts are nothing more than a record keeping device for calculating plan benefits. Notional accounts are the equivalent of keeping a history of personified wages and contributions under a traditional solidarity system. The plan remains completely on a pay-as-you-go basis. Only the benefit formula in the solidarity system is changed.

There is also no guarantee that contributions received from future workers will be sufficient to pay benefits to retirees. Simply because each worker's benefits are a function of contributions made by the worker during his or her working career doesn't mean that the next generation of workers will make sufficient contributions to pay the benefits calculated when due. Consequently, the government must still make sophisticated actuarial projections, and must still worry about adjusting benefits or increasing contributions to achieve long term actuarial balance in the system.

#### **4.7 DIFFICULT TO ACHIEVE TARGET REPLACEMENT RATIOS**

A traditional solidarity benefit formula is very precise about the benefit to be paid to pensioners as a percentage of pay preceding retirement. In Ukraine, a man who works for 25 years and retires at age 60 gets a benefit of 55% of average wages. Under a notional account plan, it is virtually impossible to calculate the retirement benefit -- either in hryvnia or as a percent of pay. The ultimate benefit depends on "interest" credits each year, the conversion factors used to convert hypothetical account balances into annuities at retirement, and other factors. These factors may become subject to manipulation by the government in order to solve fiscal crises. Predicting future benefits for notional accounts is more complex than trying to predict the value of a savings account in a bank 20 years in the future.

#### **4.8 DISABILITY AND SURVIVOR BENEFITS**

Defined contribution arrangements, funded or unfunded, do not provide adequate disability or survivor benefits to those who die or become disabled at a young age. Account balances are simply inadequate to purchase a reasonable benefit. Consequently, traditional formulas must usually be used for those who are disabled or die prior to about age 45. These formulas must then be integrated with the notional account plan. The practical applicability of a notional

accounts system, therefore, depends on what is done to ensure the social protection of needy people who cannot be protected through any system that relates benefits only to past contributions.

#### **4.9 COMPLEX RECORD KEEPING**

Record keeping requirements for notional account plans are far more complex than for traditional solidarity systems. In traditional systems, only a history of wages, contributions and work periods is needed. In notional systems, hypothetical account balances must be maintained as well. This requires tracking opening balances, interest credits (which, since they are notional not actual, are constantly subject to political pressure and manipulation), correcting errors, and handling contributions made for periods when the person did not work. While this is simpler than keeping track of account balances in a true accumulation system, it is still a substantial additional record keeping burden.

### **5. WHAT ARE THE PRACTICAL IMPLEMENTATION ISSUES?**

#### **5.1 DIFFERING RETIREMENT AGES FOR MEN AND WOMEN**

Notional account plans are difficult to implement when female retirement ages are lower than male retirement ages. Women will contribute for fewer years, accumulating smaller account balances – leading to inadequate benefits.

#### **5.2 USE OF UNISEX CONVERSION FACTORS AND CALCULATION OF LIFE EXPECTANCY**

Theoretically, if a male and a female have the same hypothetical account balance and retire at the same age, the man should receive a higher benefit because they will, on average live for between five to seven years less after retirement. Since men receive benefits for a shorter time, the annuity should be larger. In practice, notional account plans normally use the same factors for males and females. This means males generally receive lower benefits than they should and females receive greater benefits. Said another way, the “rate of return” for men is less than it appears to be.

The life expectancy calculation will determine how account balances are converted into annuities. Using conservative (low) mortality rates will produce lower pension benefits. This will save the pension system money, but may also lead to inadequate benefits. The mix of male and female mortality rates used in calculating the unisex annuity factor will also have an impact on the level of benefits and the cost to the government. If the actual male/female mix of retirees differs from what was used to calculate the unisex factors, it could save or cost the pension system money. The factors used to calculate the life expectancy factor can be used to decrease the apparent rate of return on contributions under the system. If the system discriminates strongly against men, they will have a stronger incentive to remain “outside” the mandatory

contribution system by working in the gray economy. The less “fair” the system, the greater will be the evasion of contributions.

### **5.3 SELECTING THE INDEX FOR “INTEREST” CREDITS**

Indexes vary from the increase in average wages to increase in national wages, to rates linked to the capital markets. For example, rates of return on short -term state securities, bonds or other market indices can be used. Linking to wages provides a greater correlation with contributions, since contributions are related to the size of the labor force, the average wage, and the wage cap. Linking to capital market indices more closely approximates returns and benefits from a true accumulation system. The interest credits will be a major factor in determining the size of the benefits, and therefore the cost of benefits, or the ultimate size of the payroll taxes needed to support the system. Since the selection of the index is discretionary, the government is likely to manipulate the process – posting unrealistically high credits because the resulting higher pension benefits will not have to be paid until long in the future..

### **5.4 PROTECTING VULNERABLE MEMBERS OF SOCIETY**

To have adequate benefits for low-paid workers, for those who have only worked part time or who have experienced long periods of unemployment, and for women who are out of the workforce to raise children, a minimum benefit using a traditional formula is often required. If the minimum benefit formula just provides for a poverty level benefit, it will not prevent benefit inadequacy for many workers. On the other hand, if the minimum benefit is high enough to protect against low interest credits and improvements in life expectancy, it may override the notional account formula for a large number of retirees. In this instance, there is no purpose to having notional accounts.

### **5.5 VALUING THE BENEFIT EARNED PRIOR TO INTRODUCTION OF NOTIONAL ACCOUNTS**

When changing to notional accounts, something must be done about the benefit earned by current workers up to the transition date. The simplest procedure is to introduce the notional accounts only for future pension payments. The benefit earned under the old formula would remain. Alternatively, the prior benefits must be cancelled and converted to a starting balance for workers new notional accounts. The proper way to do this is to compute the actuarial present value of the accrued benefit and use this as the starting account balance. This is a complex calculation. Some countries have based the starting balance on the hypothetical notional account balance that would have existed if the notional formula had always been in effect. This approach works poorly if the prior system had privileged retirements, had different retirement ages for men and women, or had benefit formulas which give greater weight to earlier years of service than later years. Under any circumstances, this method will produce a starting account balance which is not equivalent to the present value of the benefit earned under the prior formula, and may result in large gains or losses to the pension system and participants.

## **6. WHEN MIGHT NDC BE APPROPRIATE?**

### **6.1 AS A SUPPLEMENT TO A BASIC BENEFIT FORMULA**

Notional accounts could be used as a supplement to a basic benefit formula. This would solve many of the problems associated with having a pure defined contribution formula in the solidarity system. It could also support the future conversion of notional accounts to real accumulation accounts. Of course, it would make the system more complex to administer.

### **6.2 NDC WITH MINIMUM BENEFIT EQUAL TO TRADITIONAL FAP**

A notional account formula could be used with a minimum benefit based on a traditional formula. This would assure a minimum replacement ratio regardless of interest credits and changes in the annuity conversion factor. Depending on the level at which the minimum benefit was set, it could render the NDC formula almost meaningless, or it could act as a true minimum benefit in case of poor performance of the notional accounts.

### **6.3 FUNDED NDC, MOVED TO REAL ACCUMULATION SYSTEM**

NDC can be used as a transition vehicle to an accumulation system in countries with underdeveloped capital markets. Accounts are initially set up on a notional basis through the solidarity system. Preferably the government sets aside cash in an earmarked fund equal to the sum of the account balances of all participants. When the actual accumulation system is started, the amount in each worker's notional account is deposited into the real account in the accumulation system. Therefore, the entire amount in the notional account becomes "real" at some point in time in the future. Alternatively, all or a portion of the notional account can be transferred to real accumulation accounts in the future. Of course, whenever a portion of the notional contributions is moved to a true accumulation system, a deficit will be created in the solidarity system, which must be financed.

### **6.4 SUBSTITUTE FOR A "FUNDED" SYSTEM INVESTED ONLY IN STATE SECURITIES**

If the deficit created as a result of pension reform is funded by borrowing money from an accumulation system, no funding has been created. The alleged funded system is taking contributions which have been diverted from the solidarity system and loaning them back to the solidarity system, either directly or indirectly. This creates no funding at all, and does nothing to solve future demographic problems or to create economic growth. If the mathematics of this arrangement are examined, it becomes clear this is nothing more than a notional account system indexed to the rate of return on State securities. It is vastly cheaper administratively to just have a notional account plan than it is to set up a "sham" funded system.

## 7. IS NDC RIGHT FOR UKRAINE?

There are several reasons why notional accounts are not suitable for adoption in Ukraine today. The current draft pension law on mandatory state pension insurance would accomplish many of the same goals in a much more transparent way, and is much more similar to the current system.

- Ukraine is currently using a wage coefficient system for some benefit recalculations and proposes to use the same system under the draft mandatory pension insurance law. If the national average wage and the total wage fund increase by the same amount each year, it can be demonstrated mathematically that a wage coefficient system and the notional account system produce identical results. However, the wage coefficient system is much more transparent and clear, and is much closer to the formula used in the current pension system.
- The draft pension law would move over time to a benefit formula based on career average pay. This is one of the main goals of the notional account system. Proponents claim that politically, it is not possible to move to career average pay transparently. It appears this is not true in Ukraine.
- The draft pension law provides incentives for voluntary delayed retirement. The benefit increase for each year of delayed retirement is explicitly stated. Consequently, this accomplishes the same thing as the notional account system in a much more transparent way.
- The proposed revised solidarity system requires few changes to the personification system which is currently being developed. Implementing notional accounts would require additional features to be added to the personification system at a time when the Pension Fund is already overburdened with implementation of new administrative procedures.
- The current and proposed solidarity systems handle disability and survivor benefits with little difficulty. Both would have to be rethought to accommodate notional accounts.
- The current system allows women to receive sufficient retirement benefits by providing full benefits with a lesser service requirement, and by giving service credit for years in which women are absent from the work force to raise children. This would be far more difficult to do in a notional account plan.

From my experience with notional account plans in the private sector in the United States, I favor traditional solidarity system formulas over notional account formulas, particularly for a national pension system, for several reasons:

- The NDC formula is difficult to understand for participants: Workers invariably believe that there is a real account with their money in it, and that it belongs to them.

- Participants can't figure out what their benefit will be: It is difficult to prepare reliable projections of the benefit at retirement. Usually the best that can be done is a statement of the current account balance
- Too much risk is pushed to participants in the form of lower benefits: Workers don't realize their benefits have been reduced
- Defined contribution plans, in whatever form, create problems for disadvantaged groups and women: It is difficult to provide adequate retirement benefits to women, and adequate disability and survivor benefits using defined contribution formulas
- There is an extra layer of record keeping required, which Ukraine may not be prepared to handle. Developing the current personification system is already a challenge. Notional account balances adds one more layer of complexity.